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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,224	04/10/2006	Poul E. Nielsen	H0610.0385/P385	4975
24998 7590 05/21/2008 DICKSTEIN SHAPIRO LLP 1825 EYE STREET NW Washington, DC 20006-5403				
EXAMINER				
LAO, MARIALOUISA				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,224

Applicant(s)

NIELSEN ET AL.

Examiner

LOUISA LAO

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-9 is/are allowed.
- 6) ☒ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 7/1/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 3/19/08, have been fully considered with respect to:
 - a. the rejection of claim 1 under 35 U.S.C. 112, second paragraph, Applicants' amendment obviate the rejection. Thus the rejection has been withdrawn.
 - b. the rejection(s) of claims 1-9 under 35 U.S.C. 103(a) have been fully considered and are persuasive, since the methanol-synthesis-by-products (aldehydes & ketones) were not explicitly addressed in the cited prior art references. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made, see below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 7 recites the broad recitation "in the range of 10-95% by weight", and the claim also recites "preferably 40-70% by weight" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tierney et al. (US5384335, US'335) in view of Sie et al. (US5216034, US'034 *equivalent to EP0483919 in ISR*) or Konig et al. (US5631302, US'302 *equivalent to EP0682002 in ISR*) further in view of Dunn et al. (US254899, US'899).

5. Applicants' claims are drawn to process for production of methanol comprising *inter alia* the conversion of a feed stream into a converted process stream in the presence of a catalyst (Cu) active in the conversion of hydrogen, carbon monoxide and carbon dioxide into methanol;

cooling of said converted process stream to a cooled process stream having a temperature of 20-200°C, which is lower than the converted process stream; hydrogenation of the cooled process stream into a hydrogenated process methanol-rich stream in the presence of a hydrogenation catalyst (Cu-based); cooling of said hydrogenated process methanol-rich stream and phase separation of the cooled, condensed process stream into a gas phase and a liquid crude methanol.

6. US'335 teaches a methanol synthesis process under relatively mild conditions in a slurry phase with a catalyst combination comprising reduced copper chromite and basic alkali salts or alkaline earth salts, where the major by-product is *methyl formate* (see abstract), as well as other oxygenated compounds, water, CO₂ and *dimethyl ether* (col.6 ll55-56). US'335 teaches that methanol can be produced directly in an extremely exothermic process; where industrial modifications have aimed to achieve the *enhancement of heat transfer*, which will inevitably result to *higher yields*, lower energy consumption and a higher equilibrium conversion (col.2 ll40,48-52). US'335 teaches that the "two-step synthesis" to produce methanol is also known, via the methyl formate route or carbonate route, which has been taught to use a *two-reactor system* (col.4 ll6-10) or a *single reactor system*(col.4 l 37-36). US'335 teaches that alkali, when used, promotes the methanol synthesis reaction by enhancing the activity of the copper chromite catalysts (col.8 ll42-43). US'335 shows by examples the process, where the resulting products, contain the crude methanol with trace amounts of by-products (methyl formate, water, dimethyl ether) and a gaseous phase, containing unreacted or excess starting materials, trace amounts of methanol and trace amounts of by-products; including the *level or % Cu* in the catalyst (col.8 ll23-27).

7. The difference between the instant claims and US'335 is the reference of the instant claims to (a) a temperature of the cooled process stream to be lower than the converted process stream ; (b) conversion of the by-products (aldehydes and/or ketones) to methanol; (c) the form or shape of the hydrogenation catalyst.

8. US'034 (col.2 ll25-28) or US'302 (col.1 ll3353) is relied upon to show, at the time of Applicants' invention, that in methanol synthesis incorporating the use of a series of reactors, would invariably incorporate a means of heat exchange or cooling mechanism.

9. US'899 is relied upon to show that at the time of Applicants' invention, that it is known that aldehydes and ketones can undergo hydrogenation using hydrogenation catalysts such as Ni, Pt, Cu, copper-chromite, nickel chromium alloys or *other well-known hydrogenation* catalysts (see column 3 lines 33-53) to produce methanol at 100-275°C. US'899 teaches the catalytic hydrogenation of aldehydes and/or ketones to their corresponding alcohols at temperatures around 180°C (column 3 line 43).

10. One of ordinary skill in the art at the time of the invention would have found it obvious to utilize the hydrogenation process of US'335 with either the cooling mechanisms of US'034 or US'302 in the method of making methanol since the methanol process would invariably have aldehyde and/or ketone by-products as taught by US'335, in addition to the explicitly taught unreacted and recovered syngas.

11. The artisan of ordinary skill would be motivated to employ the hydrogenation process of US'899 in US'335's method of making methanol since both cited prior art references are geared towards the efficacious ways of increasing methanol yields, whereupon reduction of byproducts would lead to a reasonable expectation of success.

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The claim would have been obvious because “a person or ordinary skill has a good reason to pursue the known options within his or her technical grasp”, such as two-step synthesis that incorporates processes that lead to methanol production. If this leads to the anticipated success, it is likely the product, not of innovation, but of ordinary skill and common sense.

The use of different, but analogous reactants in an old process, does not render the process itself unobvious. *In re Durden et al.* 226 U.S.P.Q. 359.

12. The remaining difference of the form or shape of the catalysts is not unobvious, since one of ordinary skill in the art would have found it commonplace to utilize the catalyst, suitable for his purposes, which are found to exhibit the utility as catalyst well-known in his craft. Absent a showing of criticality and unexpected beneficial results, the catalyst shape or form is part of the artisan's routine of experimentation.

13. No claims are allowed.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Nielsen (US6881759); Christiansen (US1302011); Struder (EP0501331 *in ISR equivalent to US5179129*), Marion (US4110359), Chang et al. (US4344868).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louisa Lao whose telephone number is (571)272-9930. The examiner can normally be reached from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Elyer can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Louisa Lao
Examiner
TC1600 GAU 1621

/Jafar Parsa/
Primary Examiner, Art Unit 1621